* NOTICES *

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[The technical field to which invention belongs] Especially, as a frequency band, to the field of a millimeter wave, this invention is closed with the lid made from the dielectric, and relates to the RF integrated circuit package which equipped with the wave absorber between the lid of a dielectric, and the cap for an electric shield as effective structure about RF integrated circuit package structure.
[0002]
[Description of the Prior Art] drawing 3 and drawing 4 show the conventional RF package structure -- as -- a conductor -- the structure surrounded with the wall was taken
[0003] That is, the perspective diagram showing the structure of a RF package [in / the former / in drawing 3] and drawing 4 are the cross sections of the conventional technology shown in drawing 3 .
[0004] the circuit board 33 mounted in the package base 31 in drawing 3 and drawing 4 -- electromagnetism -- a conductor with the cap 36 for a shield -- it is surrounded with the wall
[0005]
[Problem(s) to be Solved by the Invention] however, the amplifier which has high interest profit such conventionally especially in the case of structure -- like -- case the power difference in the same frequency is big with an input and an output -- a conductor -- feedback started with the input and the output that the width of face of a wall was below the cut off frequency in the propagation mode of a waveguide, and it oscillated, and there was a problem of the frequency characteristic deteriorating
[0006] therefore, the conductor of a package -- it is necessary to make width of face of a wall narrower enough than the cut-off in waveguide mode however -- if it designs in consideration of the cut-off of a waveguide in the field of the millimeter wave of 60GHz -- a conductor -- the width of face of a wall is set to about 2mm, and it becomes difficult to mount and arrange an element like actual MMIC
[0007] the width of face more than the cut-off of a waveguide -- a conductor -- when a wall is constituted, feedback starts between I/O and problems, such as an oscillation, occur in this case, a conductor -- the amount of feedback during I/O can be reduced by equipping the wall surface of a wall with a wave absorber etc., and an oscillation can be avoided
[0008] However, a semiconductor device which operates with a millimeter wave cannot arrange the wave absorber which OUT gas generates in the package which carried out the hermetic seal from the relation on reliability.
[0009] It is in offering the new RF integrated circuit package which made it possible to cancel many above-mentioned faults to which this invention is made in view of the conventional above-mentioned actual condition, therefore the purpose of this invention is inherent in a Prior art.
[0010]
[Means for Solving the Problem] In order to attain the above-mentioned purpose, the RF integrated circuit package concerning this invention The package base where the RF circuit board etc. was mounted, and a dielectric closure board made from the dielectric arranged on the aforementioned package base so that the aforementioned RF circuit board on this package base etc. might be closed, It

has the wave absorber arranged in the outside of this dielectric closure board, and caps, such as metal which surrounded this wave absorber and was arranged so that this wave absorber might be shielded, and is constituted.
[0011] The dielectric substrate for adjustment is prepared between the aforementioned dielectric closure board and the aforementioned wave absorber.
[0012] Specific inductive capacity of the aforementioned dielectric closure board is made or less into ten.
[0013] The package base where, as for the RF integrated circuit package concerning this invention, the RF circuit board etc. was mounted again, The package metal wall formed so that the aforementioned RF circuit board etc. might be surrounded on this package base, The dielectric substrate for closure arranged on this package metal wall, and the dielectric substrate for adjustment formed on this dielectric substrate for closure, the wave absorber formed on this dielectric substrate for adjustment, and the electromagnetism with which it was equipped on the aforementioned package base so that each aforementioned component arranged on the aforementioned package base might be surrounded -- it has a cap for a shield and is constituted
[0014]
[Embodiments of the Invention] Next, this invention is explained in detail, referring to a drawing about the form of that the desirable operation of each.
[0015] [Form 1 of operation] drawing 1 is the perspective diagram by this invention showing the form of the 1st operation.
[0016] With reference to [composition of form 1 of operation] drawing 1 , the RF circuit section 3 containing a semiconductor device, a bypass capacitor, etc. is mounted in the package base (BESUKYARIA) 1, and the airtight is carried out with the dielectric closure board 4 which is LID (lid) made from a dielectric. The wave absorber 5 is stuck on the outside of this dielectric closure board 4.
[0017] the package base 1 in which the wave absorber 5 was attached -- further -- electromagnetism -- a shield -- public funds -- the caps 6, such as a group, -- electromagnetism -- with the wave absorber 5, the composition which reduces penetration of the signal from the outside of the level which cannot be prevented, leak to the exterior of the signal inside a package, etc. is taken by shielding-like
[0018] [operation of the form 1 of operation] -- operation of the form of the 1st operation is explained below Functional circuits, such as amplifier, are mounted in the interior of a package. When the mode which spreads as a waveguide the portion surrounded on the package wall surface exists in the case of the conventional package by which a RF circuit etc. is mounted and the whole surface is being worn with the metal etc. and a level difference etc. is in I/O of amplifier, the problem that feedback starts and oscillates to an output arises from an input.
[0019] Since the ceiling section of the upper surface of the package base 1 where the RF circuit etc. was mounted with the form of the 1st operation by this invention is considered as dielectric closure with the dielectric closure board 4, it stops spreading waveguide mode.
[0020] Moreover, spurious radiation is reduced by equipping with a wave absorber 5 the exterior of the dielectric closure board 4 used for the hermetic seal on the upper surface of a lid, and an oscillation etc. is prevented.
[0021] Moreover, if a dielectric constant is high in order to use general-purpose on large frequency, in order that influence may come out, a dielectric constant is lowered as much as possible, and ten or less are desirable as specific inductive capacity.
[0022] The form of the 2nd operation by the [form 2 of operation], next this invention is explained with reference to a drawing.
[0023] Drawing 2 is the cross section by this invention showing the form of the 2nd operation.
[0024] With reference to the composition of the form 2 of operation, and drawing 2 [of operation], the circuit board 23 is mounted in the front face of the package base 21, and the dielectric substrate 24 for closure is arranged on the package metal wall 22 established further around the circuit board 23 of the package base 21.
[0025] The dielectric substrate 27 for adjustment is arranged in the upper surface of the dielectric

substrate 24 for closure, and the wave absorber 25 is formed on the dielectric substrate 27 for adjustment.
[0026] in the package base 21, the circuit board 23, the dielectric substrate 24 for closure, the dielectric substrate 27 for adjustment, and a wave absorber 25 are surrounded -- as -- electromagnetism -- it is equipped with the cap 26 for a shield
[0027] In the form of this 2nd operation, in order to improve a property with the wave absorber in a millimeter wave, as shown in drawing 2 , the dielectric substrate 27 further for impedance matching is inserted on the dielectric substrate 24 for closure. By making it such composition, especially if the thickness of a dielectric is adjusted in the form of this 2nd operation to operating frequency and impedance matching is taken to a wave absorber 25, it is effective.
[0028]
[Effect of the Invention] In order to prevent propagation in waveguide mode if this invention is used as explained above, it is possible to mount with sufficient space in response to a limit of the width of face of a package also in the field of the millimeter wave whose mounting conditions were severe.
[0029] Moreover, ****** is possible for a wave absorber in high-reliability, without taking into consideration the OUT gas which the resin contained in a wave absorber generates, since it attaches out of the package by which the hermetic seal was carried out.

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CLAIMS

[Claim(s)]
[Claim 1] The RF integrated circuit package characterized by having the package base where the RF circuit board etc. was mounted, a dielectric closure board made from the dielectric arranged on the aforementioned package base so that the aforementioned RF circuit board on this package base etc. might be closed, the wave absorber arranged in the outside of this dielectric closure board, and caps, such as metal which surrounded this wave absorber and was arranged so that this wave absorber might be shielded.
[Claim 2] The RF integrated circuit package according to claim 1 further characterized by preparing the dielectric substrate for adjustment between the aforementioned dielectric closure board and the aforementioned wave absorber.
[Claim 3] A RF integrated circuit package given in any 1 term of the claims 1 or 2 further characterized by making specific inductive capacity of the aforementioned dielectric closure board or less into ten.
[Claim 4] The RF integrated circuit package which is characterized by providing the following and by which it was characterized. The package base where the RF circuit board etc. was mounted. The package metal wall formed so that the aforementioned RF circuit board etc. might be surrounded on this package base. The dielectric substrate for closure arranged on this package metal wall. the dielectric substrate for adjustment formed on this dielectric substrate for closure, the wave absorber formed on this dielectric substrate for adjustment, and the electromagnetism with which it was equipped on the aforementioned package base so that each aforementioned component arranged on the aforementioned package base might be surrounded -- the cap for a shield
[Claim 5] The RF integrated circuit package according to claim 4 further characterized by making specific inductive capacity of the aforementioned dielectric substrate for closure or less into ten.

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MEANS

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[0011] The dielectric substrate for adjustment is prepared between the aforementioned dielectric closure board and the aforementioned wave absorber.
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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] It is the perspective diagram by this invention showing the gestalt of the 1st operation.
[Drawing 2] It is the cross section by this invention showing the gestalt of the 2nd operation.
[Drawing 3] It is the perspective diagram of the conventional technology.
[Drawing 4] It is the cross section of the conventional technology shown in drawing 3 .
[Description of Notations]
1 -- Package base
3 -- RF circuit section
4 -- Dielectric closure board
5 -- Wave absorber
6 -- electromagnetism -- a shield -- public funds -- a group cap (CAP)
21 -- Package base
22 -- Package metal wall
23 -- Circuit board
24 -- Dielectric substrate for closure
25 -- Wave absorber
26 -- Cap for an electronic shield (CAP)
27 -- Dielectric substrate for adjustment

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[0019] Since the ceiling section of the upper surface of the package base 1 where the RF circuit etc. was mounted with the form of the 1st operation by this invention is considered as dielectric closure with the dielectric closure board 4, it stops spreading waveguide mode.
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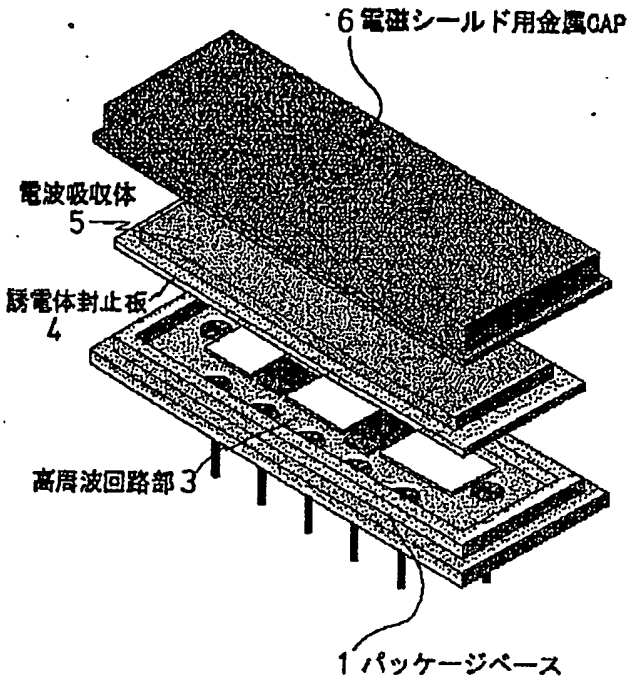
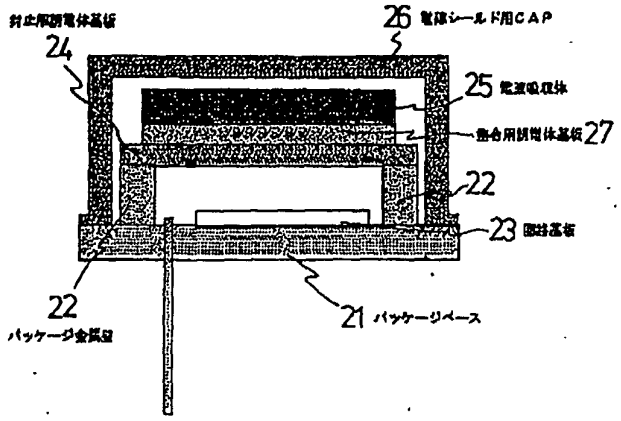
[Translation done.]

Drawing selection drawing 1



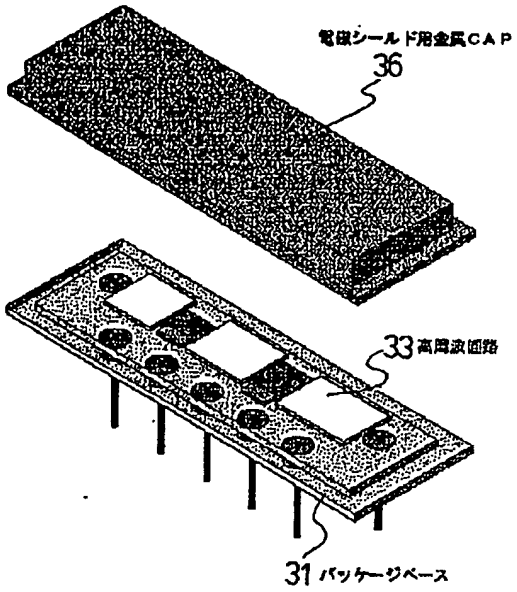
[Translation done.]

Drawing selection drawing 2



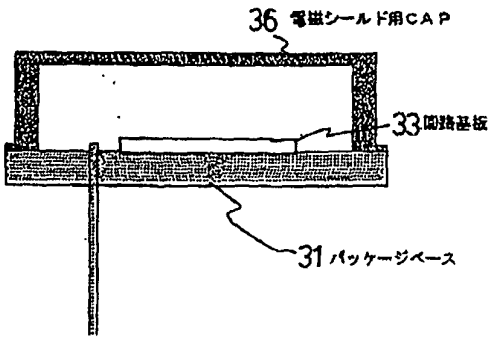
[Translation done.]

Drawing selection drawing 3



[Translation done.]

Drawing selection drawing 4



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